

L Number	Hits	Search Text	DB	Time stamp
1	1	("5874780").PN.	USPAT; US-PGPUB	2003/03/15 11:55
2	5232	((flip adj chip) same (method or process\$3 or forming))	USPAT; US-PGPUB	2003/03/15 12:51
3	3727	((flip adj chip) same (method or process\$3 or forming)) and (gold or Au or copper or Cu or "NiAu")	USPAT; US-PGPUB	2003/03/15 12:51
4	1917	((flip adj chip) same (method or process\$3 or forming)) and (gold or Au or copper or Cu or "NiAu")) and bump and (pad or lead)	USPAT; US-PGPUB	2003/03/15 12:51
5	970	((flip adj chip) same (method or process\$3 or forming)) and (gold or Au or copper or Cu or "NiAu")) and bump and (pad or lead)) and (press or force or pressing or forcing)	USPAT; US-PGPUB	2003/03/15 11:59
6	796	((flip adj chip) same (method or process\$3 or forming)) and (gold or Au or copper or Cu or "NiAu")) and bump and (pad or lead)) and (press or force or pressing or forcing)) and (adhesive or resin)	USPAT; US-PGPUB	2003/03/15 12:00
7	488	((flip adj chip) same (method or process\$3 or forming)) and (gold or Au or copper or Cu or "NiAu")) and bump and (pad or lead)) and (press or force or pressing or forcing)) and (adhesive or resin)) and @ad<=20000310	USPAT; US-PGPUB	2003/03/15 12:44
8	821	((flip adj chip) same (method or process\$3 or forming) and 438/107,108,118,455,612,613.ccls.	USPAT; US-PGPUB	2003/03/15 12:43
9	718	((flip adj chip) same (method or process\$3 or forming) and 438/107,108,118,455,612,613.ccls.) not (((flip adj chip) same (method or process\$3 or forming)) and (gold or Au or copper or Cu or "NiAu")) and bump and (pad or lead)) and (press or force or pressing or forcing)) and (adhesive or resin)) and @ad<=20000310)	USPAT; US-PGPUB	2003/03/15 12:29
10	754	((flip adj chip) same (method or process\$3 or forming) and 257/778-780.ccls.	USEAT; US-PGPUB	2003/03/15 12:44
11	509	((flip adj chip) same (method or process\$3 or forming) and 257/778-780.ccls.) and @ad<=20000310	USPAT; US-PGPUB	2003/03/15 12:44
12	451	((flip adj chip) same (method or process\$3 or forming) and 257/778-780.ccls.) and @ad<=20000310) not (((flip adj chip) same (method or process\$3 or forming) and 438/107,108,118,455,612,613.ccls.) not (((flip adj chip) same (method or process\$3 or forming)) and (gold or Au or copper or Cu or "NiAu")) and bump and (pad or lead)) and (press or force or pressing or forcing)) and (adhesive or resin)) and @ad<=20000310))	USPAT; US-PGPUB	2003/03/15 12:45
13	451	((flip adj chip) same (method or process\$3 or forming) and 257/778-780.ccls.) and @ad<=20000310) not (((flip adj chip) same (method or process\$3 or forming) and 438/107,108,118,455,612,613.ccls.) not (((flip adj chip) same (method or process\$3 or forming)) and (gold or Au or copper or Cu or "NiAu")) and bump and (pad or lead)) and (press or force or pressing or forcing)) and (adhesive or resin)) and @ad<=20000310))	USPAT; US-PGPUB	2003/03/15 12:59

14	2683	(flip adj chip) same (method or process\$3 or forming)	EPO; JPO; DERWENT; IBM_TDB	2003/03/15 12:51
15	351	((flip adj chip) same (method or process\$3 or forming)) and (gold or Au or copper or Cu or "NiAu")	EPO; JPO; DERWENT; IBM_TDB	2003/03/15 12:51
16	77	((flip adj chip) same (method or process\$3 or forming)) and (gold or Au or copper or Cu or "NiAu")) and bump and (pad or lead)	EPO; JPO; DERWENT; IBM_TDB	2003/03/15 12:52

CLIPPEDIMAGE= JP02001144143A

PAT-NO: JP02001144143A

DOCUMENT-IDENTIFIER: JP 2001144143 A

TITLE: FLIP-CHIP MOUNTING METHOD

PUBN-DATE: May 25, 2001

INVENTOR-INFORMATION:

NAME

UCHIYAMA, KAZUO

COUNTRY

N/A

ASSIGNEE-INFORMATION:

NAME

NIPPON AVIONICS CO LTD

COUNTRY

N/A

APPL-NO: JP11326705

APPL-DATE: November 17, 1999

INT-CL (IPC): H01L021/60;H05K001/18

ABSTRACT:

PROBLEM TO BE SOLVED: To provide a flip-chip mounting method by Au-Au connection guaranteeing stable connection even if warpage exists in a substrate and the heights of metal bumps in a flip chip are irregular.

SOLUTION: In a flip-chip mounting method, a metal bump is formed in a flip-chip electrode, insulating paste is dispensed on a substrate, and a flip-chip is

heated and pressurized on a substrate pad. A metal bump is also formed on the substrate pad, a dent is formed in the center part of the metal bump and the metal bump is connected to the metal bump formed on the flip-chip electrode.

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DERWENT-ACC-NO: 2003-018531

DERWENT-WEEK: 200301

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TITLE: **Flip chip** mounting **method** for integrated circuit, involves **forming** electrically conductive polymer bumps on bond pads of **flip chip** and substrate, and aligning pads after covering adhesive layer on substrate **bump**

----- KWIC -----

NOVELTY - Electrically conductive polymer bumps (2,8) are formed on bond pads (6,4) of a flip chip (1) and substrate (3). The substrate **bump** is covered with an adhesive layer (5) and the chip bumps are partially hardened. The pads are aligned and chip **bump** is bonded with substrate **bump** through the adhesive layer.

ADVANTAGE - Eliminates the use of bond wires between a chip and the substrate. **Flip chip** bumps formed of polymer material, have sufficient mechanical integrity to deform substrate bond pads. Enhances mounting quality and improves **process** efficiency.

bond **pad** of substrate 4

bond **pad** of flip chip 6

Flip chip mounting method for **integrated** circuit, involves forming **electrically** conductive polymer bumps on bond pads of flip chip **and substrate**, and aligning pads after covering adhesive layer on substrate bump

FLIP CHIP MOUNT METHOD INTEGRATE CIRCUIT FORMING ELECTRIC CONDUCTING POLYMER
BUMP BOND PAD FLIP CHIP SUBSTRATE ALIGN PAD AFTER COVER ADHESIVE LAYER
SUBSTRATE BUMP

DERWENT-ACC-NO: 2002-636107

DERWENT-WEEK: 200268

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TITLE: Bumping process for chip scale packaging using flip chip technology, forming thermosetting plastic on active surface of leaded bumps of under-bump-metal structures and grinding surface of thermosetting plastic to expose leaded bumps

----- KWIC -----

NOVELTY - A wafer has several chips (202) formed on it, each with several bonding pads (206) and each chip has an active surface (202a) and a passivation layer that exposes the bonding pads, while the under-bump metal structure and the leaded bump are sequentially formed on each of the bonding pads.

DETAILED DESCRIPTION - The under bump metal (UBM) structures material is preferably chromium, titanium, titanium-tungsten alloy, copper, or any alloys of chromium, titanium, tungsten or copper.

The material of the leaded lumps is preferably composed of tin and at least 85% lead and the tin:lead ratio is 3.97, 5.95 or 10.90.

Bumping process for chip scale packaging using flip chip technology, forming thermosetting plastic on active surface of leaded bumps of under-bump-metal structures and grinding surface of thermosetting plastic to expose leaded bumps

BUMP PROCESS CHIP SCALE PACKAGE FLIP CHIP **TECHNOLOGY** FORMING **THERMOSETTING**
PLASTIC ACTIVE SURFACE LEAD BUMP **BUMP METAL** **STRUCTURE** GRIND SURFACE
THERMOSETTING PLASTIC EXPOSE LEAD BUMP

DERWENT-ACC-NO: 1996-418347

DERWENT-WEEK: 199642

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TITLE: Flip-chip superconductive integrated circuit - has junction bump formed on substrate wiring and on superconductive integrated circuit niobium electrode which are then bonded by lead alloy

----- KWIC -----

The integrated circuit (1) is bonded onto a substrate (3) through a connector (5) using the wireless-bonding method. The substrate has a copper-plated wiring (4a) and a foundation metal (4b) that comprise its wiring (4) while the integrated circuit has an ultra-thin niobium electrode (2) formed on its undersurface.

A junction bump (5b) is formed on the foundation metal and on the exposed surface of the Nb electrode. The bumps are bonded by a lead alloy (5a) which is superconductive in nature. The bumps and the lead alloy comprise the connector.

ADVANTAGE - Prevents deterioration of device after being exposed to extreme ambient conditions with improved touched resultant force between bumps, alloy, substrate wiring, and Nb electrode; provides reliable semiconductor device. Reduces device cost with use of lead alloy and Nb electrode.

Flip-chip superconductive integrated circuit - has junction bump formed on

substrate wiring and on superconductive integrated circuit niobium electrode which are then bonded by lead alloy

FLIP CHIP SUPERCONDUCTING INTEGRATE CIRCUIT JUNCTION BUMP FORMING SUBSTRATE
WIRE SUPERCONDUCTING INTEGRATE CIRCUIT NIOBIUM ELECTRODE BOND LEAD ALLOY

	U	1 [1 J	Document ID	Issue Date	Pages	Title	Current OR
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	JP 2001144143 A	20010525	4	FLIP-CHIP MOUNTING METHOD	
2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	WO 200245152 A	20020606	18	Flip chip mounting method for integrated circuit, involves forming electrically conductive polymer bumps on bond pads of flip chip and substrate, and aligning pads after covering adhesive layer on substrate bump	
3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 20020095784 A	20020725	12	Bumping process for chip scale packaging using flip chip technology, forming thermosetting plastic on active surface of leaded bumps of under-bump-metal structures and grinding surface of thermosetting plastic to expose leaded bumps	
4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 5795818 A	19980818	15	Flip chip interconnection for integrated circuit chip and a substrate - involves metallising substrate bond contacts, and coining ball bond bumps formed on chip bond pads, and then aligning the pads and contacts for joining	

	Current XRef	Retrieval Classif	Inventor	S	C	P	2	3	4	5	Image Doc. Displayed	PT
1			UCHIYAMA, KAZUO	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	JP 2001144143 A	<input type="checkbox"/>
2			AKITA, M et al.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 6410415	<input type="checkbox"/>
3			FANG, J	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 20020095784	<input type="checkbox"/>
4			MARRS, R C	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 5795818	<input type="checkbox"/>

	U	1 [1]	Document ID	Issue Date	Pages	Title	Current OR
5	<input type="checkbox"/>	<input checked="" type="checkbox"/>	JP 08204244 A	19960809	8	Flip-chip superconductive integrated circuit - has junction bump formed on substrate wiring and on superconductive integrated circuit niobium electrode which are then bonded by lead alloy	

	Current XRef	Retrieval Classif	Inventor	S	C	P	2	3	4	5	Image Doc. Displayed	PT
5				<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	JP 08204244 A	<input type="checkbox"/>

	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Document ID	Issue Date	Pages	Title	Current OR
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 20020050404 A1	20020502	12	INTEGRATED ELECTRONIC DEVICE HAVING FLIP-CHIP CONNECTION WITH CIRCUIT BOARD AND FABRICATION METHOD THEREOF	174/260
2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 20020005247 A1	20020117	16	ELECTRICALLY CONDUCTIVE PASTE MATERIALS AND APPLICATIONS	156/291
3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 20020001879 A1	20020103	25	GRAVITATIONALLY-ASSISTED CONTROL OF SPREAD OF VISCOUS MATERIAL APPLIED TO SEMICONDUCTOR ASSEMBLY COMPONENTS	438/127
4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 20010044197 A1	20011122	17	WAFER-SCALE ASSEMBY OF CHIP-SIZE PACKAGES	438/612
5	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 20010024127 A1	20010927	18	SEMICONDUCTOR TESTING USING ELECTRICALLY CONDUCTIVE ADHESIVES	324/755
6	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 6458237 B1	20021001	14	Mounting method of semiconductor device	156/310
7	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 6406989 B1	20020618	10	Method of fabricating semiconductor device with bump electrodes	438/612
8	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 6365967 B1	20020402	15	Interconnect structure	257/734
9	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 6335571 B1	20020101	21	Semiconductor flip-chip package and method for the fabrication thereof	257/787
10	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 6335568 B1	20020101	16	Semiconductor device and method of fabrication thereof, circuit board, and electronic equipment	257/738

	Current XRef	Retrieval Classif	Inventor	S	C	P	2	3	4	5	Image Doc. Displayed	PT
1	257/737		AKAMATSU, TOSHIYA et al.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 20020050404	<input type="checkbox"/>
2	156/292		GRAHAM, TERESITA ORDONEZ et al.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 20020005247	<input type="checkbox"/>
3			JIANG, TONGBI et al.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 20020001879	<input type="checkbox"/>
4	438/617		HEINEN, KATHERINE G. et al.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 20010044197	<input type="checkbox"/>
5			BERNIER, WILLIAM E. et al.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 20010024127	<input type="checkbox"/>
6	156/323; 438/119		Tsunoi, Kazuhisa et al.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 6458237	<input type="checkbox"/>
7	438/108; 438/613		Ikegami, Gorou	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 6406989	<input type="checkbox"/>
8	29/592		Akram, Salman et al.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 6365967	<input type="checkbox"/>
9	257/737; 257/778; 257/788; 257/790; 257/792		Capote, Miguel Albert et al.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 6335571	<input type="checkbox"/>
10	257/773; 257/780; 438/106; 438/612; 438/613		Yuzawa, Hideki et al.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 6335568	<input type="checkbox"/>

	U	1 [1 J]	Document ID	Issue Date	Pages	Title	Current OR
11	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 6323552 B1	20011127	18	Semiconductor device having bumps	257/737
12	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 6310484 B1	20011030	19	Semiconductor test interconnect with variable flexure contacts	324/754
13	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 6100597 A	20000808	10	Semiconductor device and method for manufacturing the same	257/787
14	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 6088236 A	20000711	15	Semiconductor device having a bump having a rugged side	361/783
15	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 6016060 A	20000118	13	Method, apparatus and system for testing bumped semiconductor components	324/757

	Current XRef	Retrieval Classif	Inventor	S	C	P	2	3	4	5	Image Doc. Displayed	PT
11	228/180.22; 228/180.5; 228/4.5; 257/734; 257/738; 257/778; 257/779; 257/780; 257/781; 257/784; 257/786		Koyama, Yugo	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 6323552	<input type="checkbox"/>
12	324/757; 324/761		Akram, Salman et al.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 6310484	<input type="checkbox"/>
13	257/737; 257/783; 257/788		Nakamura, Hirofumi	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 6100597	<input type="checkbox"/>
14	174/259; 174/260; 228/180.22; 257/692; 257/737; 257/739; 257/778; 361/768; 361/771; 361/773; 361/774; 361/779; 438/108; 438/119; 438/665; 438/666		Tomura, Yoshihiro et al.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 6088236	<input type="checkbox"/>
15	324/754		Akram, Salman et al.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 6016060	<input type="checkbox"/>

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16	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 5977637 A	19991102	11	Integrated electronic device having flip-chip connection with circuit board	257/772
17	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 5926694 A	19990720	43	Semiconductor device and a manufacturing method thereof	438/106
18	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 5611481 A	19970318	12	Integrated electronic device having flip-chip connection with circuit board and fabrication method thereof	228/180.22
19	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 5545589 A	19960813	14	Method of forming a bump having a rugged side, a semiconductor device having the bump, and a method of mounting a semiconductor unit and a semiconductor device	438/119
20	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 5118370 A	19920602	11	LSI chip and method of producing same	156/73.1
21	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 4749120 A	19880607	6	Method of connecting a semiconductor device to a wiring board	228/123.1

	Current xRef	Retrieval Classif	Inventor	S	C	P	2	3	4	5	Image Doc. Displayed	PT
16	257/738		Akamatsu, Toshiya et al.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 5977637	<input type="checkbox"/>
17	438/107; 438/108; 438/118		Chigawa, Yasuhide et al.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 5926694	<input type="checkbox"/>
18	228/123.1		Akamatsu, Toshiya et al.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 5611481	<input type="checkbox"/>
19	438/120; 438/613; 438/665		Tomura, Yoshihiro et al.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 5545589	<input type="checkbox"/>
20	156/261; 156/295; 156/580.2; 156/73.3; 228/1.1; 228/110.1; 228/180.22; 29/840; 29/879; 438/118		Ozawa, Kazuhito	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 5118370	<input type="checkbox"/>
21	156/295; 228/180.22		Hatada, Kenzo	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 4749120	<input type="checkbox"/>